USP 4 DFZ II
USP 4 Flow-Through Systems
The highlights of the new USP 4 Flow-Through Cell DFZ II

The new ERWEKA flow-through cell tester DFZ II can be used for various applications thanks to its wide range of available cell types, e.g. for testing poorly soluble products or low-dose formulations with sustained release.

Innovations as the new cell design with increased leak-tightness and the optimized tubing system with quick locks allow a fast preparation and implementation of dissolution tests. The new leaner cell bodies ensure an improved cell warming and can be heated individually. All USP 4 DFZ II systems can be easily controlled with the Disso.NET USP 4 dissolution software via a controller.

- **Standardized cell head**: The new cell head fits all offered cell bodies and thus enables a faster assembly of cells while offering lower purchasing costs. Through a quick lock in the cell head faster tube mounting is also possible.
- **Increased leak-tightness**: Due to reducing the number of seals to 3 pieces per cell and using flat seals with an increased sealing surface, the process safety can be heightened.
- **Optimized cell bodies & individual cell heating**: The reduction of the cell body provides a better heating and faster preparation of cells. Each cell can be heated individually via a rotary switch.
- **Easier cleaning**: Due to the 3-way valve for water emptying on the back of the device, the water bath cleaning can be handled much easier. In addition, simple water temperature and water level control are possible with the water level pointer (colour coding) and the two openings for PT 100 sensors on the device cover.

**Compact & corrosion-resistant housing**

The smaller footprint with clear arrangement of cells in one line saves laboratory space and offers a perfect visual control of the cells at all times. In addition, the tube organizer on the back of the device prevents mixing up the cell tubes.

**NEW!**
100% USP/EP/JP compliant
Controlled by Disso.NET USP 4
Variety of different cells available
Independent, closed flow-through system

**NEW!**
Standardized cell head
Increased leak-tightness
Optimized cell bodies & individual cell heating
Easier cleaning

**NEW!**
Compact & corrosion-resistant housing
Compact & corrosion-resistant housing
New improved
Cell design

Accompanying our flow-through systems, we offer a variety of different cells with a new improved design for different purposes - from the standard tablet cell to granulate & powder cells to cells for implants, suppositories and stents.

The new standardized cell head fits all offered cell bodies and facilitates along with the new standardized flat seals (only 3 pieces per cell: connection, head and body) handling and assembly of the cells. The optimized cell bodies with decreased cell wall thickness guarantee an improved cell heating.

New quick lock system on the cell head allows instant tube removing.

Thanks to this new cell concept, the cells can be mounted easier to the new flow-through tester DFZ II and thus enable a faster preparation and performance of dissolution tests.

Highlights
- Variety of different cells available
- 100% USP/EP/JP compliant
- Standardized cell head

Different cells for different purposes
The ERWEKA Disso.NET USP 4 Software is the perfect companion for our USP 4 systems. The software takes over full control of our USP 4 systems and offers support for all USP/EP dissolution cells used in these systems. It also supports cells for special applications (e.g. cell with cream adapter) and visual guides for formulation placing in the respective cells.

Disso.NET helps you with standard USP 4 dissolution jobs, handles qualifying tasks and provides control over each single function of the connected devices (e.g. pump, flow-through cell and sample collector). In addition, the software includes an easy to handle method editor for comfortable programming of dissolution methods (for highest safety in GMP environment). Our audit trail also generates detailed protocols of all events and times and thus enables tracing changes at any time. After finishing the dissolution test, Disso.NET USP 4 creates comprehensive reports (as PDF-files) and can export all results in various formats (e.g. as XML-file).

The ERWEKA stand-alone flow-through cell system is perfect for performing simple release tests with manual sampling. Therefore, the new flow-through cell tester DFZ II offers in a system with the ERWEKA piston pump HKP 720 and the ERWEKA heater DH 2000i an easy entry into testing with USP 4 systems for a small budget.

The valve-free piston pump transports the test medium with highest precision via seven channels to the flow-through cells and automatically adopts the setting of the flow rate. With the low-vibration heater the water in the water bath can be quickly heated to the required temperature.

The stand-alone system consists of:
- Flow-through cell DFZ II + heater DH 2000i
- Piston pump HKP 720
The open ERWEKA offline flow-through cell system is the perfect solution for testing poorly soluble products that need unlimited amounts of fresh media to dissolve. It also offers the opportunity to quickly and easily exchange media with different pH-values within one test run and is thus perfectly suited for IV/IVC testing.

With the ERWEKA sample collector FRL 724 representative samples are taken over a certain period for later analysis (up to 18 sampling intervals with 25 ml rack possible). Thanks to the integrated three-way valves a splitting into waste and sampling takes place here automatically.

The open system therefore enables, following the sampling, to analyze more precisely the actual release in the considered period.

The system configuration comprises:

- Flow-through cell DFZ II + heater DH 2000i
- Piston pump HKP 720
- Sample collector FRL 724
- Controller with Disso.NET USP 4 software
- One or more medium reservoirs

倒塌 testing with automated UV/VIS analytic

USP 4 Closed Online System

The closed ERWEKA offline flow-through cell system is excellently suited for testing low-dose formulations with sustained release (e.g. implants). It allows performing comprehensive long-term dissolution tests with small media volumes.

A fixed media volume (100 - 1000 ml) is continuously led via the ERWEKA media transfer station LMT 2 in a circle through the system and pumped through the flow cells. With the integrated UV/VIS analytic, samples can be automatically drawn from the media reservoir at software controlled time points. This allows users to draw a sound conclusion about the dissolution process.

After the test, the closed system provides the opportunity to analyze in detail the cumulative release at the considered point in time.

The system configuration consists of:

- Flow-through cell DFZ II + heater DH 2000i
- Piston pump HKP 720
- UV/VIS analytik (e.g. Shimadzu UV-1900i)
- Peristaltic pump IPC 8
- Media transfer station LMT 2
- Controller with Disso.NET USP 4 software

Infinite media testing and sampling

USP 4 Open Offline System

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- Sample collector FRL 724
- Controller with Disso.NET USP 4 software
- One or more medium reservoirs
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A fixed media volume (100 - 1000 ml) is continuously led via the ERWEKA media transfer station LMT 2 in a circle through the system and pumped through the flow cells. With the sample collector FRL 724 several samples are taken at different times for further analysis (different sampling intervals with different racks possible).

After the test, the closed system provides the opportunity to analyze in detail the cumulative release at the considered point in time.

The system configuration consists of:

- Flow-through cell DFZ II + heater DH 2000i
- Piston pump HKP 720
- Sample collector FRL 724
- Peristaltic pump IPC 8
- Media transfer station LMT 2
- Controller with Disso.NET USP 4 software

Comprehensive long-term testing

**USP 4 Closed Offline System**

**Highlights**

- Comprehensive long-term testing
- Controlled by Disso.NET USP 4
- Independent, closed flow-through system

**Easy media transfer with the LMT 2**

With the compact ERWEKA media transfer station LMT 2 a closed loop for performing long-term dissolution tests according to USP 4 can be easily created. The LMT 2 is therefore used as a medium reservoir and ensures an optimal media mixing and distribution through the whole release test.

The optimized tubing system with a new tube holder and rotatable bottle caps (safety caps) makes handling easier and saves valuable laboratory space. Using standardized laboratory glass bottles as media vessels also enables an easier media transport for saving and further analysis. The glass bottles are available in 500 ml as standard size and optionally in the sizes 100 ml, 250 ml and 1000 ml. With the comfortable keypad the stirring speed can be easily set.

**Highlights**

- 100% USP/EP/JP compliant
- Optimal media distribution
- Wide range of vessel sizes
- Improved tubing
## Technical data

<table>
<thead>
<tr>
<th>Product</th>
<th>DFZ II</th>
<th>LMT 2</th>
<th>IPC 8 pump</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Length/width/height</strong></td>
<td>540 mm / 220 mm / 290 mm</td>
<td>435 mm / 206 mm / 520 mm</td>
<td>125 mm / 145 mm / 220 mm</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>ca. 8 kg (without media cells &amp; water)</td>
<td>11 kg (without media bottles)</td>
<td>25 kg</td>
</tr>
<tr>
<td><strong>Number of cells</strong></td>
<td>7 cells in a row</td>
<td></td>
<td>7 channels (valve-free)</td>
</tr>
<tr>
<td><strong>Water bath</strong></td>
<td>6 liter volume, level indicator, emptying via 3-way-valve</td>
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<td></td>
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<tr>
<td><strong>Heating</strong></td>
<td>Flow-through heater, cell warming of stations individually switchable</td>
<td></td>
<td>Flow rates adjustable (2.0-32.0 ml/min. at 120 strokes/min.)</td>
</tr>
<tr>
<td><strong>Connecting block</strong></td>
<td>Connecting block with safety valve in each station</td>
<td></td>
<td>Control: Membrane keypad with LED display</td>
</tr>
<tr>
<td><strong>Temperature control</strong></td>
<td>External PT100 temperature sensor; PT100 temperature sensor in each station (optional)</td>
<td></td>
<td>Power: 230 V / 50-60 Hz, 115 V / 50-60 Hz</td>
</tr>
<tr>
<td><strong>Test cells and inserts</strong></td>
<td></td>
<td></td>
<td>Power: 230 V, 200 Watt</td>
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<tr>
<td>Tablet cell 22.6 mm (standard)</td>
<td></td>
<td></td>
<td>Interface: RS 232</td>
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<tr>
<td>Tablet cell 12 mm</td>
<td></td>
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<tr>
<td>Suppository and capsule cell</td>
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<tr>
<td>Powder &amp; Granulate cell (USP+EP)</td>
<td></td>
<td>Tube: PTFE tubes with 1.6 mm inside diameter</td>
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<tr>
<td>Stent cell</td>
<td></td>
<td>Control: Alpha-numeric membrane keypad with LC display</td>
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<tr>
<td>Implant cell</td>
<td></td>
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<tr>
<td>Gel and cream application for 22.6 mm tablet cell</td>
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<tr>
<td>One-way adapter with 22.6 mm tablet cell</td>
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<tr>
<td>Cleaning cell for system cleaning</td>
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<tr>
<td>Temperature-calibration head</td>
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<td></td>
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</tr>
<tr>
<td><strong>Interface</strong></td>
<td>RS 232 (PT 100 sensors)</td>
<td></td>
<td>RS 232</td>
</tr>
</tbody>
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